



RF



ORANGE COUNTY AMATEUR RADIO CLUB, INC.

VOL. LIV NO. 3

P.O. BOX 3454, TUSTIN, CA 92781-3454

March 2013

The Prez Sez.....

by Nicholas AF6CF



Hello! We are in March already, and we have great news for all the Club members. This month's speaker will talk about an exciting radio DX adventure to some far away island, so make sure you show up at the General meeting.

Field Day preparations are under way, with a couple of meetings and with great ideas and input from everyone. The 25kW Generator fund is started and (hopefully) will attain its goal. We have several positions filled with Band and

Food captains. However, a few are still open, so hurry up to volunteer. The FD Site is secured and my prediction is that we will have a great time, propagation or not. The two co-chairs Dino and Bob are doing terrific work organizing the event, and even training us, the not-so-skilled operators.

Next month, we plan to participate in the Baker to Vegas race communications support, Visalia DX Convention and other radio related events to make our Club one of the most active in the region. Don't forget the special September anniversary celebration, either. We will be really busy this year with all this and more activities.

I look forward to an eyeball contact with you all at the next General Meeting.

73 DE AF6CF

General Meeting Friday March 15

Wayne Overbeck N6NB

"Two DX-peditions to the South Pacific"

Wayne Overbeck - N6NB will talk on his recent DX adventures to the South Cook Islands (E51, formerly ZK1). These were Wayne's first DX-peditions in his 55 year ham career.

The next general meeting will be on:

**Friday, March 15th
@ 7:00 PM**

As usual, we will be meeting in the east Red Cross Building, Room 208.
See you there!

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AMATEUR RADIO CLUB**
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Monthly Events:

General Meeting:

Third Friday of the month
at 7:00 PM
American Red Cross
600 Parkcenter Drive
(Near Tustin Ave. & 4th St.)
Santa Ana, CA

Club Breakfast:

Second Saturday of every
month at 8:00 AM
Jagerhaus Restaurant
2525 E. Ball Road
(Ball exit off 57-Freeway)
Anaheim, CA

Club Nets (Listen for W6ZE):

28.375 ± MHz SSB
Wed- 7:30 PM - 8:30 PM
Bob AF6C, Net Control

146.55 MHz Simplex FM
Wed- 8:30 PM - 9:30 PM
Bob, WB6IXN, Net Control

7.086 ± MHz CW **OCWN**
Sun- 9:00 AM – 10 AM
John WA6RND, Net Control

VISIT OUR WEB SITE

<http://www.w6ze.org>

for up-to-the-minute club
information, the latest
membership rosters, special
activities, back issues of RF,
links to ham-related sites,
vendors and manufacturers,
pictures of club events and much
much more.

Club Dues:

Regular Members	...\$20
Family Members*	...\$10
Teenage Members	..\$10
Club Badge**	\$3

Dues run from Jan thru Dec and are
prorated for new members.

*Additional members in the family of
a regular member pay the family rate
up to \$30 per family.

**There is a \$1.50 charge if you'd
like to have your badge mailed to
you.

The Los Angeles Orienteering Club

Fox Hunt

March 10th



The next southern California on-foot transmitter hunting session will be Sunday, March 10, 2013 at the Santa Fe Dam Recreation Area. All ages are welcome, so bring the family. A ham radio license and/or knowledge of radio equipment are not required. Experts will be on hand to teach you the basic techniques of on-foot radio direction-finding (RDF). Try your hand at a 5-fox two-meter international-rules course of low to moderate difficulty, set by Marvin Johnston KE6HTS.

This radio-orienteering session is being combined with a classic orienteering session of the Los Angeles Orienteering Club (LAOC). That's why it's on Sunday, not Saturday. If you have receivers, scanners, directional antennas, attenuators, or other equipment suitable for on-foot RDF, be sure to bring it. Make sure all batteries are fresh. A limited amount of RDF gear will be available for loan. Because Marvin has duties for LAOC during this event, there will not be an antenna and attenuator building workshop this time. However, if you want to pick up a kit for antenna and/or attenuator to take home, contact Marvin by e-mail (marvin@west.net) and he will bring it to this event.

The 5-fox hunt will commence at 10 AM. Hunters may start out on the courses at any time until 1 PM. Courses close at 2:30 PM. Orienteering flags and electronic scoring will be used at each transmitter. If you have an "e-stick," be sure to bring it. For non-LAOC members, there will be a \$13 donation for individual adults and \$10 for youth to cover expenses related to the use of Los Angeles Orienteering Club's e-punch equipment and maps. There is no charge for children age 10 and younger when with an adult. For LAOC members, the donation is \$8 for adults and \$5 for students.

Santa Fe Dam Recreational Area is in the city of Irwindale near the intersection of the 605 and 210 freeways. From 605 northbound, take the Live Oak Avenue exit and go east. From 605 southbound, take Arrow Highway exit and go east. In both cases, you will merge into Arrow Highway westbound. The park entrance will be on your left, opposite Azusa Canyon Road. Alternately, from the 210 freeway, exit at Irwindale Avenue, go south to Arrow Highway, turn right (west) and look for the park entrance on your right opposite Azusa Canyon Road. Vehicular entrance and parking costs \$10 per vehicle. After the entry kiosk, continue to the first stop sign, go straight through the intersection and then turn left into the parking lot at the end of the short road. Look for the orange and white orienteering flag. Talk-in is on 146.52 MHz simplex.

A map for navigation to the park is at www.homingin.com. If rain is forecasted, check that site for possible cancellation. Remember to set your clock ahead one hour Saturday night for Daylight Savings Time so you won't be an hour late. Questions? Send e-mail to k0ov@homingin.com. The park's business office will not have updated information about this event.

73,
Joe Moell K0OV

Tech Talk #107:**by Corey Miller - KE6YHX****The Lightning Protection Process:****Part III of IV The CadWeld Process**

In Part II (RF February 2013) ground rod installation was covered. This month the CadWeld welding process is discussed.

CadWeld One-Shot GR1161L:

The model number specifies the size of CadWeld crucible, both the size of rod to be welded to, and the size of cable (solid or stranded) to weld to it. The letters specify the configuration: single cable, double, etc. (see Figure III.1) The Welding Material and Starting Material are in the same vial. The Starting Material is removed from the bottom by pressing or tapping on the plastic container to loosen it, but don't open the vial until you are ready to pour.



Figure III.1: The CadWeld GR1161 parts.



Figure III.2: The concave steel disc had dislocated, but was not a problem.

I received the CadWeld with the concave steel disc dislocated. (see Figure III.2) If there are problems with the order, it is advisable to include jpg's of the damage or problem in an e-mail. Do this immediately after full inspection. Note, the metal sleeve goes in the side of the crucible, and sometimes falls out. Simply place it back in to sheath the cable before placing the crucible on the rod. Because of the placement of the metal sleeve as a stopper for the crucible, and the shock of driving the rod, the crucible must be placed on the rod after driving the rod into the ground. Simply grind off any deformed metal before placing the crucible.

If better instructions than those included for any CadWeld product are needed, they can be downloaded from the Erico web site (www.erico.com), in Adobe pdf format. On their main page, click on Library, enter: LT30323, and select "CadWeld" and "Instructions" from the pop-up menus. Note: the file may need an upgrade of Adobe Reader from the Adobe web site, and there is a license agreement to do that.

The Flint Ignitor is not returnable. The CadWeld GR1161L and Flint Ignitor T320 are \$15.83 from Gordon Electric Supply, Kankakee, IL. UPS Ground Shipping to Orange, CA is \$10. (I am not an employee of Gordon Electric Supply.)

The CadWeld Process:

The next day, I started the CadWeld procedure. Both the rod and cable must be cleaned before placing the crucible. This is done with a blowtorch to remove liquid residue, and a wire brush to remove the resulting oxidation. The cable was trimmed to-length and the insulation was cut far enough back on the welding cable to place the conductor all the way into the side of the crucible. Even though the cable is stranded, and was kept covered with insulation, a blowtorch was used to clean it and the strands were scrubbed; this was done by brushing it in one direction with a wire brush on all sides, until the copper was light in color. The end of the ground rod was torched and scrubbed about a half-of-an-inch down on the sides, and on top.

A butane mini-torch and a brass brush from Harbor Freight were used to do this.

Next, the CadWeld crucible was twisted onto the end of the ground rod; the rubber grommet on the bottom of the crucible held it in place. The conductor sleeve was placed all the way into the side, and the conductor hole was positioned on the side to where the cable was to come off of the ground rod. The crucible was placed on the ground rod with the rod's end stopping on the sleeve. Then, the welding cable was sized-up to the sleeve, and it was found to be a little too large for it, so some strands were trimmed off around the sides of the cable. A CadWeld with a larger sleeve may have been called for here. After that, the cable was pushed



**Figure III.3: The flames and smoke from the CadWeld crucible.
Right: Corey backing away from the crucible.**

into the sleeve; a few strands got pushed back outside the sleeve, but I did not try to correct this.

Following the instructions, the ceramic piece was dropped into the crucible with the steel disc facing concave-up, the displacement aligned with the tilt of the ground rod. Then, the plastic vial was opened over the crucible, and the welding material was poured into the middle of the concave steel disc. Three-quarters of the starting material fell out with it, from a quarter-sectioned portion of the bottom of the vial, but I continued and placed the lid on the crucible. The remaining quarter of the starting material was tapped out into the opening. Fortunately, this was enough for ignition.

After getting ready with gloves and safety glasses, I took the flint ignitor and aimed the vent on the top of the end of it at the opening of

the crucible, pulled the trigger, and ignited the starting material. There was about a second delay before the welding material flashed. I glanced at the crucible when it did this, but was far enough away for the light to not cause any permanent eye damage. Figure III.3 shows ignition. The material in the crucible smoldered for a minute or two, and the crucible was tapped-away with a hammer. Figure III.4 shows the welding process was a success.

To increase the ground's conductivity, water-softener salt pellets were poured into the pit around the ground rod; this can be covered with soil.

Next month: Attaching new PL-259s...

73, Corey -KE6YHX



Figure III.4: The completed weld. Also seen in the pit are the water-softener salt pellets.

Heathkit of the Month #47:
by Bob Eckweiler, AF6C

Heathkit

Heathkit AV-3
AC Vacuum Tube Voltmeter (VTVM).

Introduction:

Heathkit manufactured many models of general purpose vacuum tube and solid-state voltmeters, both analog and digital, over the years. They all measure DC voltage and resistance as well as AC voltage. So why would Heathkit sell, and why would people want to buy, a VTVM that only measures AC voltage?

The answer lies in the large popularity of Hi-Fi and later stereo Hi-Fi equipment that started sweeping the nation in the mid-fifties. People designing and servicing audio equipment needed to measure audio voltages, and often small audio voltages. The typical general purpose VTVM has a low AC range of 1.5 volts RMS full-scale (FS), allowing measurement of audio down to about -10 dBm, or about a quarter-volt. The Heathkit AV-3 AC VTVM (Fig. 1) has a low range of 0.01 volts (10 mV) RMS FS, allowing measurement of audio down to -52 dB, or less than 2 mV. This high sensitivity allows easy measurement of preamplifier signals and even the direct output of microphones. For the ham, similar audio voltages can be found in the audio circuits of a transmitter's modulator.

While the AC VTVM has good low-voltage sensitivity, its high-voltage capability usually is limited to around 300 volts RMS FS, lower than the typical 1,500 volts FS of a regular VTVM. But then audio voltages over 300 volts (+52 dBm) are uncommon in most equipment.

The early Heathkit AC VTVM line was designed with a frequency response to cover the audio frequency range with a variation of under ± 1 dB. The low frequency end was 10 cps (Hz)



Fig. 1: AF6C's Heathkit AV-3 AC VTVM

while the high end was 50 kc (kHz) and improved on later models, starting with the AV-3.

The Heathkit AC VTVM Line:

Heathkit manufactured five AC VTVM kit models over the company's lifetime; they also manufactured one advanced solid-state kit voltmeter (also available factory wired). The models along with their approximate dates of manufacture and initial selling price are shown in Table 1:

Heathkit also sold factory-wired versions of the IM-21 and IM-38 designated the IMW-21 and IMW-38. In 1962 Schlumberger purchased Daystrom (and as part of Daystrom, Heathkit). Sometime between 1969 and 1973 Schlum-

berger started selling factory wired versions of many Heathkit models under the Heath-Schlumberger name. The IMW-38 became the SM-22A, and when the IM-5238 was released Heathkit released the factory wired Heath-Schlumberger SM-3258.

Kit Models:

AV-1	9/1951 - 8/1952	\$29.50
AV-2	9/1952 - 8/1956	\$29.50
AV-3	9/1956 - 1961	\$29.50
IM-21	1961 - 1968	\$33.95
IM-38	1968 - 1976	\$39.50
IM-5238	9/1976 - 1981	\$89.95

Factory Wired Models:

IMW-21	1961 - 1968	\$60.25
IMW-38	1961 - 1969	\$54.95
SM-22A	1973 - 1976	\$85.00
SM-5238	9/1976 - 1981	\$130.00

Table 1: Heathkit AC Meters

Each of the Heathkit AC VTVM models is an improvement on the preceding model. However, until the IM-5238, they all share the same ten voltage ranges: 0.01V, 0.03 V, 0.1 V, 0.3 V, 1 V, 3 V, 10 V, 30 V, 100 V, & 300 V. The IM-5238 added two ranges of 1 mV and 3 mV to the low end.

The AV-1 and AV-2 have a ± 1 dB frequency response from 10 Hz to 50 kHz. The AV-3 tops out at 400 KHz; while the IM-21 and IM-38 go up to 500 kHz (to 1 MHz at ± 2 dB).

The AV-1 AC VTVM:

The AV-1 was the original AC voltmeter kit introduced in the fall of 1951 for \$29.50. It has two tubes, a 6AU6 pentode voltage amplifier and a 6AT6 triode current driver to drive the meter. The input voltage is fed to a voltage divider chain composed of ten precision resistors in series that sum to 1 meg ohm. A ten-position rotary range switch selects the proper tap in the resistor chain for the correct range. The selected tap is then fed through a capacitor to the 6AU6 voltage amplifier. The output of the am-

plifier is AC coupled to the triode section of a 6AT6. The tube's dual diodes are not used.

Output from the 6AT6 is AC coupled to a bridge circuit consisting of two 4.7K resistors and two crystal diodes in the legs. The 200 μ A meter is wired between the legs of the bridge, and is connected to a potentiometer that sets the voltmeter calibration point. The diodes are arranged so current only flows through the meter one way. The other end of the bridge is not returned to ground, but instead returns to the cathode of the 6AU6 voltage amplifier. This provides negative feedback to increase stability and control and stabilize the gain.

The power supply consists of a 117 AC primary transformer with two secondary windings. The first provides filament voltage to the tubes and the pilot lamp, and the second feeds a half-wave voltage doubler using a dual selenium rectifier. Voltage is filtered in two series pi-network RC filters. The first feeds the current amplifier and the second the voltage amplifier.

The AV-1 front panel controls are the 10 position range switch, the pilot lamp, the power on - off slide switch and dual binding posts for the input. The power cable exits from the otherwise blank cabinet rear.

The AV-2 AC VTVM:

The AV-2 (shown in Fig. 3) replaced the AV-1 the next model year (fall 1952). It continued to sell for \$29.50 and is identical to the AV-1 in front panel layout, even so far as using the same meter, switches, pilot light and binding posts. The new front panel kept the earlier beige with red nomenclature color scheme, but changed the model designation. It is possible a few late AV-2 models have the later (AV-3) dark gray with white nomenclature paint.

Most of the changes are in the AV-2 circuit. The tube line-up remains the same. The meter bridge circuit was changed to a full compliment of four crystal diodes, with the meter directly connected across the bridge output. The feed-

back calibration control was changed to a 40 ohm pot located in the cathode of the 6AU6 voltage amplifier.

The power supply was changed considerably. Though the transformer is the same (54-2), one side of the filament winding is no longer grounded. Instead, the winding is shunted by two 47 ohm resistors in series, with their junction grounded. This was likely done to balance the filament voltage and reduce AC hum which can be picked up by the sensitive AC amplifiers. Also, the half-wave voltage doubler is gone, replaced by a single selenium rectifier. While the voltage developed is lower, the use of larger capacitors and a single lower resistance pi-filter result in lower ripple and less voltage drop. Due to the lower voltage, numerous resistor values were changed from the AV-1. Also optimized were some the coupling capacitors.

The AV-3 AC VTVM:

The AV-3 replaced the AV-2 in 1957. Like its predecessors it sold for \$29.50, at least initially. The AV-3 is a new design, but keeps the same ranges while improving the frequency response. Externally, it also keeps the same physical size; but gone are the jeweled pilot light and off-on slide switch. The metal binding posts are now insulated red and black five-way binding posts, and the range switch has twelve positions; two positions are for off. The meter nomenclature has changed though the two scales remain identical. The top center of the meter now lights up red to indicate power on, similar to the V-7A VTVM.

The AV-3 schematic is shown in figure 4. Three tubes are used: a single 6C4 triode and two 12AT7 dual-triodes. The power supply remains unchanged from the AV-2 except for the filament requirements. The rest of the circuitry is totally new. Separate voltage dividers are used for the 0.01 V to 3 V ranges and the 10 V to 300 V ranges. When on a range above 3 volts the input is fed directly into its voltage divider, but when on a range of 3 volts and below the input is fed first into a cathode follower and

then into the divider. The cathode follower converts the high input impedance into a lower impedance improving linearity

Whichever divider is selected the output goes to a 12AT7 dual triode configured as a cascode amplifier. The amplifier output is directly coupled to a buffer that uses 1/2 of the second 12AT7. and then AC coupled to other half that operates as a current amplifier driving the meter. Like the AV-2 the meter is in a bridge composed of four crystal diodes. with the meter directly across the output. However in the AV-3 the meter is damped by a 100 μ F capacitor. As with earlier models the bridge return is coupled to the cathode of the voltage amplifier (in this case the cascode amplifier) through a potentiometer that sets the system gain and hence the calibration.

The Heathkit IM-21 AC VTVM:

In 1961 the AV-3 was replaced by the \$33.95 IM-21. The IM-21 front panel layout is close the AV-3 and is painted in the sixties dark and light gray with red accents style. The meter is a different part, boasting VU damping response. The range switch is now 11 positions, with an OFF position fully clockwise next to the 300 volt range. Thus when you first turn it on you are on the least sensitive range; this was probably done to prevent the meter being turned on to a low range when hooked to a high voltage. The IM-28 size is identical to earlier units; but one nice new feature is that the calibration control is now accessible on the back of the unit.

While the block diagram of the IM-21 is similar to previous units, the circuit is completely changed. The IM-21 has two tubes, a dual section 6AW8 triode-pentode and a 6EJ7 pentode. The input section has been upgraded so a cathode follower circuit (the triode section of the 6AW8) is in the circuit on all ranges. This allows a much higher input impedance of 10 meg ohms. In the 0.01 volt through 3 volt range the input is directly coupled to the cathode follower, but in the higher ranges the signal is first attenuated in a 1000:1 (60 dB) AC com-

pensated voltage attenuator. This allows much better frequency response along with the higher input impedance. The output of the follower goes to the range switch and on to the second half of the 6AW8, which is the voltage amplifier. The output is coupled to the current meter amplifier. Like the earlier units the meter is in a crystal diode bridge with the meter directly across the output of the bridge; and as before the bridge return is fed back to the cathode of the voltage amplifier.

The power supply uses the same transformer that was used in the original AV-1 (and probably many other Heathkits). This power supply is similar to the earlier units, but with a different filtering scheme using a three section capacitor: 80, 40, 20 μF all at 150 V. Unfortunately these multi-section can capacitors are hard to find in today's market if you are restoring and need a new one.

The Heathkit IM-38 AC VTVM:

The last of the Heathkit vacuum tube AC voltmeters is the IM-38. It was introduced in 1968 for \$39.50; in the fall of 1976 it sold for \$52.50 (See figure 2 ad). It is identical to the IM-21 except for the paint scheme and a new dual primary power transformer that allows the kit to be wired for 120 or 240 VAC power. Thus the kit can be exported without having to produce a separate export model with a different transformer.

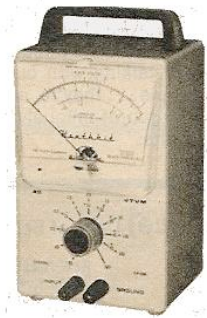
The Heathkit IM-5238 Solid State AC Voltmeter:

The final AC voltmeter produced by Heathkit was the IM-5238 (Fig. 5) which was introduced in 1976 and continued in production into 1981. With the release of the IM-5238 Heathkit presented a whole new solid-state device. Perhaps the IM-5238 will be the subject for a future Heathkit article? It is a much more advanced AC audio voltmeter with numerous features not offered on earlier units. The IM-5238 has two additional high-sensitivity scales of 1 mV and 3 mV full-scale. And, while the earlier units had linear voltage scales (which made the dB scales logarithmic), this unit has two functions that

Heathkit Laboratory AC VTVM

The IM-38 features extended accuracy in measuring low-level AC voltages. Any voltage from 10 Hz to 1 MHz can be measured quickly. It can also be used as a VU meter to indicate changing AC voltages, such as those that occur in speech or music equipment.

Kit IM-38, Shpg. wt. 5 lbs. \$52.50
Assembled SM-22A, Shpg. wt. 6 lbs. 85.00



IM-38 SPECIFICATIONS

Frequency response: ± 1 dB 10 Hz to 500 kHz. ± 2 dB 10 Hz to 1 MHz, all ranges. Ranges: Ten ranges from 0.01 to 300 V rms full scale. Decibels: Total-range -52 to +58, meter scale -12 to +2 dB (0 dB = 1 mW in 600 ohms), ten switch selected ranges from -40 dB to +50 dB in 10 dB steps. Input impedance: 10 megohms shunted by 12 pF on ranges 10 to 300 V, scale. 10 megohms shunted by 22 pF on ranges .01 to 3 V. Accuracy: Within 5% of full scale. Power requirements: 120/250 VAC, 60/50 Hz, 10 W. Dimensions: 7 $\frac{3}{8}$ " H x 4 $\frac{1}{16}$ " W x 4 $\frac{1}{8}$ " D.

Fig. 2: IM-38 Ad - Winter 1976 Factory Catalog

allow you to select a linear voltage or linear dB scale readout. Additionally, the IM-5238 has numerous special outputs: One is a one-volt peak, full-scale AC output that can be used to drive a frequency counter. It also has a DC voltage output of 0 - 1 volt full-scale, that is proportional to the input voltage, as well as a DC voltage output of 0 - 3 volts full-scale, that is proportional to the log of the input voltage. These latter two outputs can drive a strip chart recorder or other data gathering device for production testing.

Conclusion:

I currently own an AV-2 and AV-3. The AV-3 I picked up many years ago, the AV-2 was acquired recently from a friend. Both required replacement of their power supply filter capacitors. Originally these were both Heathkit part # 25-7 dual 20 μF 150 VDC electrolytic capacitors, a part that is unobtainable today. They were replaced by two axial lead capacitors of the same rating. Due to the small size of today's components, they fit in the space of the old single unit. I also ended up changing some of the paper capacitors with later style mylar ones. Interestingly the AV-2 input capacitor had been changed from 0.05 μF at 600V to 0.47 μF at 250V. I plan to order the right capacitor and replace it when I make my next order with Digi-Key, Mouser or Allied Electronics. Axial leaded capacitors are getting harder to find and carry a price penalty over radial leaded capacitors.

The AV-3 has been used numerous times for aligning radios, often measuring the audio voltage across the speaker while aligning the IF. Because of the higher sensitivity the audio volume can be kept at a much lower level making the modulation tone from the signal generator much less annoying. While a dummy load can be used instead of a speaker, it helps to hear the quality as well as volume of the signal.

73, from AF6C



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and The OCARC Inc.*

Remember, if you are getting rid of any old Heathkit Manuals or Catalogs, please pass them along to me for my research.

Thanks - AF6C

SPECIFICATIONS:

Range, RMS Full Scale, .0-01, .03, .1, .3, 1, 3, 10, 30, 100, 300
Decibels, Total, -52 DB to +52 DB (0 DB 1 MW-600 Ohms)
Input Impedance, 1 Megohm at 1 KC
Tube Complement, 1-6AU6, 1-6AT6
Accuracy, $\pm 5\%$ or Better
Power Requirements, 105-125 VAC, 50-60 CPS, 10 Watts
Dimensions, 7 $\frac{3}{4}$ " High, 4 $\frac{1}{4}$ " Wide, 4 $\frac{1}{4}$ " Deep

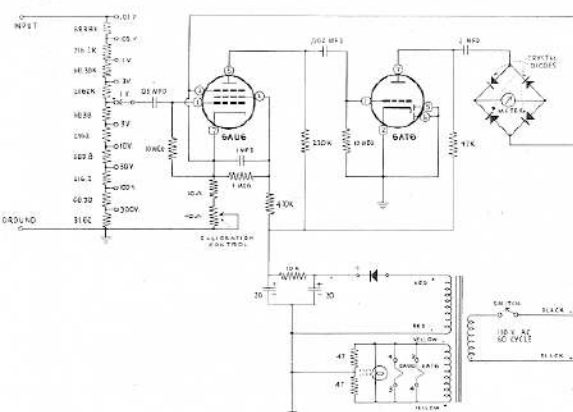


Fig. 3: AV-2 AC VTVM listing from *Heathkits for 1956* catalog

HEATHKIT

AC VACUUM TUBE

voltmeter **KIT**

features

- ## features
- ▶ Precision voltage divider resistors.
 - ▶ Measures as low as 1 millivolt at high impedance.
 - ▶ Feedback type circuit for maximum stability and frequency response.
 - ▶ Transformer operated, minimum residual hum.
 - ▶ AC volts and DB ranges set by one switch adjustment.
 - ▶ Full wave meter bridge (4 Germanium Diodes).

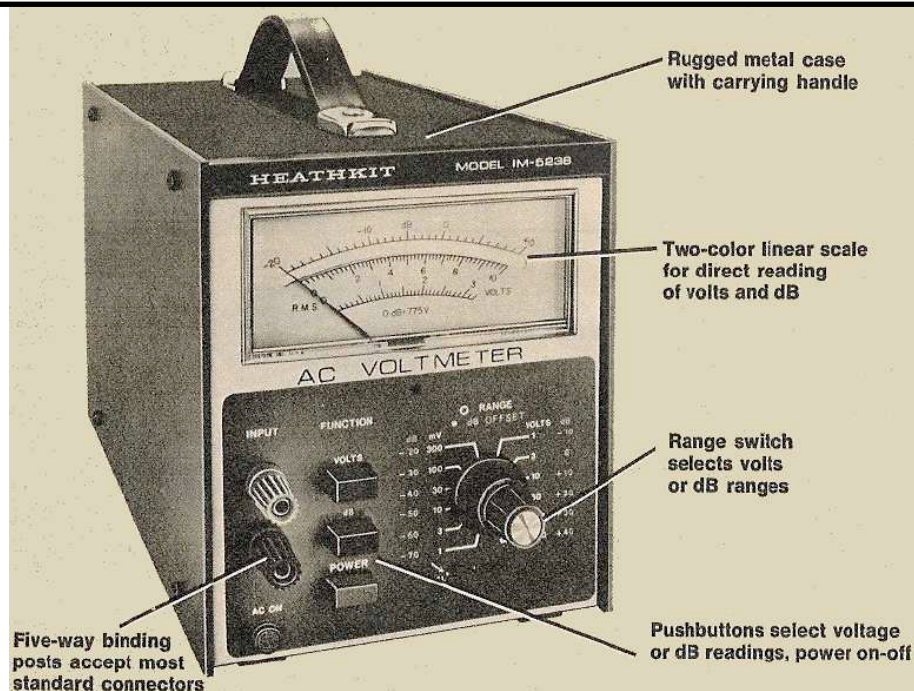
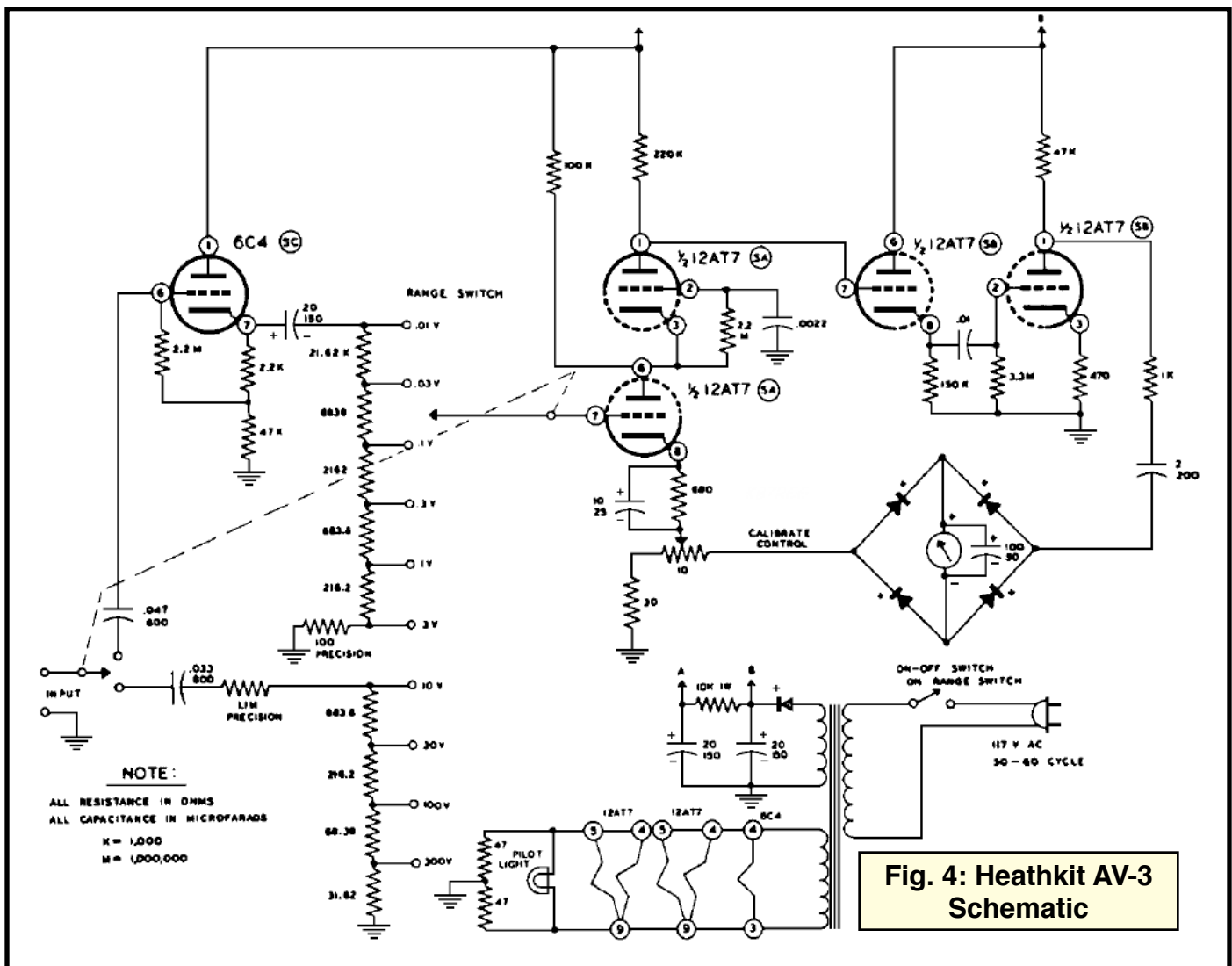
Here is the instrument to take up the slack where your general purpose VTVM becomes a little inadequate. Designed specifically for extreme sensitivity, Model AV-2 will accurately measure those very low AC voltages encountered in audio devices. The wide DB range and flat frequency response simplify those important input-output comparison measurements. Excellent as an output meter for determining the frequency response of your audio amplifier and the gain of each individual stage. Use it to measure the output of microphones and phono pickups, the ripple voltage in filter circuits and as a sensitive null detector. The AV-2 AC VTVM is ideal as a companion to the popular Heathkit V-7A VTVM not only in the service field but also in experimental laboratories, hobby shops and in any application where high AC sensitivity is required.



MODEL AV-2

\$295.00

SHPG, WT. 5 LBS.



New
Heathkit IM-5238
Deluxe AC Voltmeter
\$89⁹⁵ Kit
\$130⁰⁰ Assembled



Greetings Field Day Enthusiasts!

It's March and we already have two solid Field Day meetings behind us. We have less than 4-months to put it all together and go do the best possible job we can possibly do!

Back in the 80's I marched in the Kingsmen Drum and Bugle Corps. Our instructor gave a speech one day about "REGRET". He said, *"I don't care if we take first or last place this year, as long as you can walk off that field saying you did the absolute best you could...NO REGRETS! I don't want you to say you wished you practiced more, or listened better, or made just one more weekend camp. When this season is over, I want you to walk off that field with your head held high saying you gave it all you got! If you do, the score will follow!"* Now for all I know, he stole this from some great sports coach, but I didn't care. It meant a lot to me back then and I've applied it to my life over the years. So now I say to you, "NO REGRETS!"

The club wants to make this a year to remember and everyone who's onboard thus far shares that vision. People are changing their plans just to make this weekend. I expect it to be an EPIC event that will be talked about for many many years to come and one I don't expect to be duplicated in the next decade. There are no holds barred! We are laying it all on the line! People from all over Southern CA are going to come see...and operate...W6ZE! Its something you will want to be a part of!

I completely understand that something of this magnitude can be a bit intimidating to the new or novice ham radio operator, but I want you to hear me straight; **There IS a place for you at Field Day!** If you want to get on the air, NO PROBLEM! If you want to help me with logistics, NO PROBLEM! If you would like to help Kris in the chuck-wagon, NO PROBLEM! If you don't know what you want yet, come on down and figure it out when you get there! Come to a meeting and soak it all in! Participate in one of the upcoming training sessions! Visit someone's home and get some one-on-one instruction at your pace! All you have to do is ask!

OCARC is an amazing club and I know of no other group in Southern CA that could pull this event off, and I've visited just about every club over the years! As I said earlier, this event will be EPIC!

Join the Field Day e-mail list! Come to a Field Day meeting! Get involved! HAVE FUN!!! And remember, No Regrets!

The next Field Day Meeting will be held at AA6PW's home in Garden Grove, **March, 29th at 7:00 P.M.** Also, prior to the next three OCARC General Meetings at 6 P.M. Jeff Hall W6UX will be conducting training on Field Day phone operating techniques. The training sessions meet in the same room as the clubs general meetings.

Dino Darling, KX6D OCARC Field Day Co-Chairman

"WHOis" the OCARC Secretary? by Ken W6HHC

(This is the third in a series of articles to inform you about the background of the 2013 officers and leaders of the OCARC.)

The 2013 Secretary for the OCARC is Tim Millard – KJ6NGF. He grew up in Torrance. Then his parents moved to Yorba Linda in 1975, while Tim was in High School. Tim graduated from Valparaiso University where he studied Computer Science and Geography.



Tim KJ6NGF staffing a Ham Radio booth at the OC University of Scouting for Scout Masters

Tim had been interested in amateur radio for a long time, but never acted on it. Tim also was friends with Tim Goepfinger N6GP for 19 years. Tim N6GP would occasionally give a few nudges towards ham radio and Tim Millard finally earned his license in 2011.

Tim first joined the OCARC in 2011. He is inquisitively exploring the many facets of Ham Radio. He was first elected as a Board member with OCARC in 2013.

The ham radio areas that interest Tim are:

- Amateur Radio Direction Finding
- Studying to understand electronics
- Interested in Software Defined Radio
- Field Day

The home station of KJ6NGF consists of an ICOM 718 HF rig, a MFJ power supply, and a CushCraft R7 multiband HF vertical antenna that is a half-wave design needing no radials. Tim still has not worked out a permanent operating location inside the house, yet. So when the weather is right, he moves the HF rig outside to a table to do some operating. Tim carries a Yaesu 144/440 handheld around in his car. But because he has not set-up an outside mobile antenna, he is currently in the "listen only mode".

Tim and his wife, Sheri, live in the city of Orange with their two boys. Tim works as a statistical analyst and does his fair share of computer programming. Other interests for Tim include:

- Scouting with younger son in Cub Scout program and older son in Boy Scout program
- Scout camp
- Family camping up at Silent Valley
- Attend Pacific Symphony classic concerts
- Plays trombone and organ
- Has a small weather station
- Would like to complete a major hike such as John Muir Trail, Tahoe Rim Trail, Colorado Trail or even the Pacific Crest Trail
- Loves maps
- Fan of British Sci Fi show – Doctor Who

Ask Tim how many months he traveled backpacking in Europe....??

OCARC Members "Out-n-About"

Sherry and I visited the California Science Center on February 28 to see the space shuttle Endeavour. I wish we had budgeted more time to see more of the museum. A second trip is in the planning stages for us. If you haven't been there recently, it could be a very enjoyable day trip, unless there is a SIG ALERT on the freeway. The Endeavour is very impressive. There are short movies and exhibits about our space program and specific demonstrations about the space shuttle Endeavour in particular. I heartily recommend the trip. You won't believe how BIG the shuttle is!

Arnie Shatz N6HC



Shuttle Endeavor - California Science Center



Toilet used on the space shuttle...it is all about "suction".

OCARC

BOARD MEETING MINUTES

The OCARC Board meeting was held at the Jager-Haus Restaurant, 2525 East Ball Road, Anaheim, and called to order to order by President Nicholas Haban AF6CF on Saturday, February 9, 2012. All directors were present except Activities Doug W6FKX and Technical Bob AF6C. There were a total of nine members.

DIRECTOR REPORTS

Vice President –General Meeting Entertainment Feb: Chip; Mar working on; Apr. Walter Clark; May Nick.

Treasurer –Ken W6HHC dues are flowing in and after deducting expenses our bank account is up about \$319 since the beginning of the year. Current account balance is \$6,181.86.

Membership – Jay KI6WZU several new members added with details to be provided at the general meeting. Also will begin utilizing clip board for members and guests to sign in at general meeting.

Publicity – Kris KC6TOD – determined that Dave Lopez from ARRL can get us a Field Day article for inclusion in the OC Register.

Director-at-Large – Paul W6GMU – the mug orders awaiting final determination of Logo version. Paul will have order form at general meeting.

Old Business:

- 4.) **APRIL Board Date-** as previously approved the April Board Meeting is moved to April 6th because it is likely we will not have a quorum available on April 13th due to number of directors attending Baker to Vegas. It is confirmed Jager-Haus will have us locate in a smaller area off the main dining hall when we meet on April 6th.

- 5.) **OCARC equipment inventory** – Treasurer Ken W6HHC had the inventory list available to the board and we had discussion of some of our items. Currently the ARRL Flag is on the list but its location is unknown. Any members that have knowledge of its location should let the board know. The board requested



that the inventory list be updated to include the “loaner rig” that was donated to the club. Also the board is looking for interest in someone heading up a project to mount the newer generator onto the club trailer.

6.) Field Day –

- **FD Planning Meetings** - Next Field Day planning meeting is February 22nd. Board has requested that one or more FD chairs be present at monthly Board Meeting to report on needs of committee. VE testing is planned on being offered at FD. School will likely provide access to cafeteria for this purpose with no change in the application required. FD setup can begin on Thursday evening after 5pm due to a change in ARRL FD rules.
 - **Food Donations** – Kris KC6TOD has volunteered to chair food at FD. Looking for each attendee to donate \$20 towards food cost.
 - **25KW Generator** – motion to rent generator for FD with approximate \$600 budget carried. Also, asking membership to make specific donations towards the cost since fuel prices are hard to project for June and concern that actual cost will be higher than \$600 with rental and fuel.
- 7.) **Mug Logo's.** Board looking to finalize mug logo selection with preferences being provided to Bob for additional design work.

New Business:

- 1.) **Newsletter Editors:** Feb – K6PEQ; Mar W6FKX; Apr – AF6CF; May – KI6WZU; Jun – W6HHC; Jul – W6GMU; Aug – open; Sept – N6GP; Oct – KC6TOD.
- 2.) **General Meeting Programs ,**
 - Feb – Chip Margelli K7JA New Geometries for Yagi Beam Antennas - The Story Behind the InnovAntennas' LFA and OP-DES Yagi
 - Mar – in works
 - Apr – Walter Clark – Ionization
 - May – Nick – RC controls using Amateur Radio.
- 3.) **OCARC 80th Anniversary** – Previous a motion was approved for mugs to be offered for sale to members. Discussed whether to offer a basic mug as a gift at time of annual Christmas dinner for all in attendance. No conclusion but would require a vote of the General membership to approve if cost borne by club funds. Correspondingly if Christmas Dinner price increased to offset cost then Board could directly approve. Motion approved to purchase 10 mugs for raffle prizes during the year.
- 4.) **TV Station Transmitter Tour.** A general interest list will be circulated to membership with the idea that a tour can be arranged later this year at one of the TV station transmitter facilities on Mt. Wilson.
- 5.) **Storage Container.** Discussion of the idea of purchasing a metal storage container that would be kept at a single location for all the clubs assets. Paul W6GMU will be researching locations for placement of such container, Nicholas AF6CF will research container cost further with business contacts he knows. Kris KC6TOD will do likewise in the area of cost to transport a container to a storage facility. Report back to Board at a later time.

Good of the Club

- **Restaurant Before Meeting** –an email will be sent out to members reminding them about meeting for dinner before the General Meeting at Hometown Buffet. Also, it was mentioned reminding members on the 10 meter net as well.
- **OCCARO.** Feb. 13th meeting at Red Cross offices.
Adjourned at 10:58 am

*Respectfully submitted by:
Tim Millard KJ6NGF, Secretary 2013.*



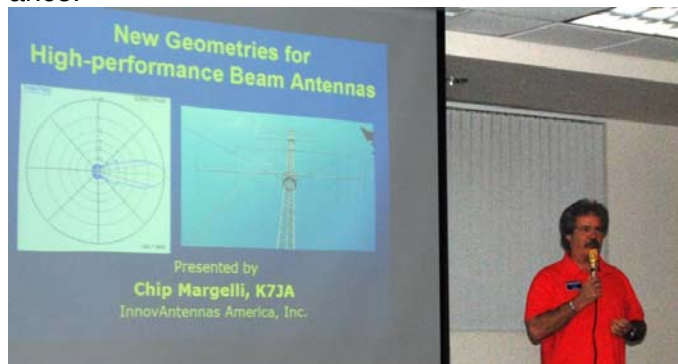
OCARC GENERAL MEETING MINUTES 2013-02-15

The OCARC General Meeting was held at the Red Cross Complex on February 15th 2013. The meeting was called to order at 7:00pm. 39 members were in attendance this includes 7 board members.

New Geometries for High Performance Beam Antennas – Straight Elements do not work right. – Chip Margelli K7JA– InnovAntennas.

As a US product representative for InnovAntennas, Chip asked us to think outside of the “typical box” regarding antennas because it turns out that simple changes in antenna shape can make a big difference.

Traditionally Yagis have straight elements and wide spacing between those elements. This design approach as documented in Jim Lawson’s book, “Yagi Antenna Design” has put much emphasis on Forward Gain and it also provides a low natural impedance.



Chip K7JA presents on “New Geometries in Beam Antennas”

Some of the Thinking Outside the Box questions that the designers from InnovAntennas asked:

- Do elements in a Yagi have to be straight?
- Do elements in a Yagi have to be equally spaced?
- Do drivers in Yagis have to show low impedance?
- Do high-gain Yagis have to be narrow-banded?

- Do all elements in a Yagi have to look alike?
- Do you have to give up high gain for good Front to Back Ratio?

They found the answers to all were NO! For example, simple bending of the tips of both elements toward each other increases the mutual coupling between elements. This is commonly seen in the Moxon Rectangle design where the RX is more effective when compared to the straight element Yagi.

Bending Just the Driven Element

InnovAntennas has incorporated bending of the driven element as an approach into their Opposing-Phase Driven Element System (OP-DES) antennas. What they report is that side lobes are reduced and the increased coupling to the reflector improves “Front to Back” ratio and raises impedance to 50 Ohms.

OP-DES

(Opposing-Phase Driven Element System)

- Bent tips of driver are out of phase, reducing side lobes.
- Increased coupling to reflector improves F/B ratio (ala Moxon).
- Increased coupling also raises feed impedance to 50 Ohms without any matching system.
- System optimization yields wide bandwidth.



10-Meter 6-element OP-DES Yagi

The OP-DES is a unique evolution of the Yagi concept that provides exceptional pattern and low SWR, along with full Yagi gain for a given boom length.

InnovAntenna 10M Beam with OP-DES “bent tips” (look inside the white circle)

A further variant on the “bending of elements” theme is what they call the Loop Feed Array (LFA). In this Yagi design they place a rectangular loop upon the boom in-line with the parasitic elements instead of a traditional split dipole. Some advantages achieved include: excellent pattern, improved wet weather performance, low noise and native 50-Ohm feed impedance.

Some of the other design types that InnovAntennas is manufacturing included:

LFA2 Yagi – Loop Driven Element plus Bent Reflector.

LFA-Q – an array of loops – that is rated in some configurations to withstand 180 MPH winds.

Justin Johnson's website: www.G0KSC.co.uk has detailed information about all the InnovAntennas designs. As does www.InnovAntennas.com or www.InnovAntennas.us.

Field Day 2013 – Much discussion time was devoted to this year's Field Day plans. An opportunity to donate towards the cost of the planned 25KW generator was started by the passing of the donation can during the meeting. One concern raised is that we need to create an opportunity for everyone to improve their contest skills prior to FD. There are members that have vast contest experience who would like to help other club members be as prepared as can be for this year. One club member was heard to passionately declare: "all pull together and win this stupid contest!" and there was much agreement. The next formal FD planning meeting was scheduled to occur at the home of Bob – AA6PW on February 22nd.



Field Day co-Chair, Dino KX6D (center in maroon shirt), discusses FD plans with members

Meeting adjourned at 9:50pm.

*Respectfully submitted by:
Tim Millard KJ6NGF, Secretary 2013.*



Western Amateur Radio Association



NOW OFFERING ARRL AMATEUR RADIO EXAMINATION SESSIONS (All levels: Tech, General, Extra)

Sponsoring Club: Western Amateur Radio Association (WARA), Fullerton, CA

Exam Site Location
La Habra Community Center
101 W. La Habra Blvd.
La Habra, CA 90631

2013 Exam Session Schedule

Thurs, Mar 21

Thurs, Apr 25 (Note: This is the 4th Thurs in April)

Thurs, May 16

Thurs, Jun 20

Exam Sessions begin at 6:00 PM

Contact VE: George T. Jacob, Jr., N6VNI

Phone: Home 562-691-7898 Cell 562-544-7373

Email: N6VNI@ARRL.net

Pre-registration is requested and preferred – Walk-ins are welcome, but please arrive within 15 minutes of the published start time or call the contact VE if you are going to be late as the exam team will close the session if there are no candidates by that time.

On Exam Day Bring the Following Items

1. A legal photo ID (driver's license, passport) or Two forms of non-photo ID; e.g., birth certificate, social security card, library card, utility bill or other business correspondence with name of the examinee as it appears on the Form 605 and current mailing address.
2. Your Social Security Number (SSN) or FCC-issued Federal Registration Number (FRN).
3. If applicable, the original and a photocopy of your current Amateur Radio license and any Certificates of Successful Completion of Examination (CSCE) you may have from previous exam session. (Photocopies will not be returned.)
4. Two number two pencils with erasers, and a pen.
5. A calculator with memory erased and formulas cleared (no iPhones, iPads, etc.).
6. Test Fee: \$15.00 (cash or check).

If you fail an element and wish to retake it, we are required to charge an additional test fee. If you pass an element, we typically offer and encourage you to take the next element. We do not charge an additional test fee for this and it gives you the opportunity to see what the next exam element is like!

OCARC Booth at University of Scouting

Submitted by Tim Goeppinger N6GP



For the second year in a row, OCARC was invited to provide a booth about amateur radio at the Orange County Boy Scouts "University of Scouting" event on February 2, 2013. This is a training conference where over 50 classes are offered to hundreds of Scout leaders in our area. Our booth was part of the Midway area of exhibitor booths in a quad area between 4 buildings at Santa Ana College.

Tim Millard KJ6NGF and Tim Goeppinger N6GP set up a table, and were thankful that the weather was a relatively warm day of 70 degrees F. Overcast, but not bad for early February!



N6GP set up his Icom IC-7000 with a 10 meter end-fed Par Electronics dipole that was strung between a mast and a nearby tree. The OCARC Banner flew proudly at the top of the 15 foot mast. An ARRL Video was played continuously on a 15 inch TV, all from battery power. KJ6NJF brought his handheld, and his 2 meter T-hunting beam made from tape measure. That antenna drew considerable interest from the scout leaders. Various brochures were provided by the ARRL to distribute at the event. Sign-up sheets were made available for people who have interest in Richard Soikkeli's (N6NH) Radio Merit Badge course.

Even though our booth was surrounded on 4 sides by large concrete-steel buildings, N6GP was able to make ten QSOs in the 10-10 International Winter Phone QSO party. It could be that a small gap between the buildings allowed him to work stations in the South from Texas to Florida.

Last year, the general feeling amongst the vendors in the Midway area was that the Scout leaders did not visit many of the booths. The OCBSA made a smart change this year by giv-

ing the leaders a card to have signed at each booth. A drawing for a prize was made from those that visited all of the booths. Even though this was more work for us, it was well worth the extra traffic.

Since there is no merit badge or amateur radio activity for Cub Scouts, our primary interest was to talk with the Boy Scout leaders. KJ6NGF had a keen insight on how to tell if the leader is a Cub or Boy Scout leader from their uniforms. The color on the shoulder loops on their uniforms is the key. Dark Blue is Cub Scouts, Green is Boy Scout, and Silver is the BSA Council.

LESSONS LEARNED:

1. The ARRL is a GREAT resource for brochures. They can be ordered from the ARRL HQ, and all you have to do is pay shipping from Newington. The brochures themselves are free. This is easier and more cost effective than downloading them, and printing them locally.
2. N6GP was astounded by the number of Scout leaders who are hams. His estimate was that a minimum of 20% of the attendees are hams! KJ6NGF suggested that we have a guest book for hams, and maybe an eyeball QSL card with W6ZE on it to hand out.
3. We felt that we could have had a little bit better presentation if we had 3 or more people at the booth. Having someone on the air all the time would be good. We did not reach out to other OCARC members to help, and next year we will.
4. The DVD/TV video display was generally ignored by the attendees. This probably is not worth the effort.

One of our neighboring booths was promoting the Summit Bechtel Reserve for the Jamboree in July. This is the inaugural event of this fantastic new site in West Virginia, and will be the permanent home to future Jamborees (once every 4 years). Amateur Radio will play a big part in this. Stay tuned for details.

For more info:

<http://www.k2bsa.net/jamboree/>

http://en.wikipedia.org/wiki/The_Summit_Becht el_Family_National_Scout_Reserve



COAR RACES plans Communication Support for the Orange Police 2013 B2V Running Team

by Ken W6HHC

Each spring, law-enforcement running teams (from around the world) have entered in a competitive foot-relay-race through the desert. This race, known as "Baker-to-Vegas" (and aka B2V), is a 120 mile long race, that starts outside Baker (CA), runs through the desert to Shoshone, then runs through Pahrump, NV and finishes at the Hilton Hotel in Las Vegas. The B2V race is broken into 20 "legs" or stages. This year, more than 275 different law enforcement teams will participate. The runners of the Orange Police Department have been supported for many years with communications by hams belonging to COAR (City of Orange Amateur Radio) RACES, the OCARC members, and Communications Volunteers from Cypress. This year, the B2V event is scheduled to begin on Saturday, April 13, with runners reaching the finish line on Sunday, April 14.

The photo below shows many of the volunteers at a COAR RACES planning meeting for the B2V race communications that was held in early March. There are twelve OCARC members in this photo. The COAR RACES Chief Radio Officer is OCARC member Dave KG6RWU (standing in the row immediately behind Kevin KG6MIH in wheelchair). The OPD volunteer coordinator for the COAR RACES organization is Carmen Cardenas, in the middle of photo with Blue shirt.



**Members of COAR RACES and friends take a group photo during a
Baker-2-Vegas Communications Planning Meeting
12 OCARC members are assisting COAR during B2V**

Selected Upcoming Special Event Stations **(Source: www.arrl.org)**

- **03/18/2013 | Omagh St Patrick's Day Parade and Festival**

Mar 18, 1100Z-1700Z, GB1SPD, Omagh, NORTHERN IRELAND. West Tyrone Amateur Radio Club. HF VHF/UHF EchoLink digital modes. QSL. West Tyrone Amateur Radio Club, Technology Education Centre, 2 Spillers Place, Omagh County Tyrone BT78 1FA, NORTHERN IRELAND.
www.grz.com/db/gb1spd

- **03/30/2013 | Amateur Radio Lighthouse Spring QSO Party**

Mar 30-Mar 31, 1300Z-2200Z, KC2YYL, Youngstown, NY. Niagara County Special Events Radio Club. 7.225 20 m 17 m 15/12 m. Certificate. John Titta, AC2DD, 1460 Staley Rd, Grand Island, NY 14072. Youtube search "KC2YYL." ARLHS # 1804. Bands may vary depending on conditions. ac2dd@arrl.net or www.kc2yyl.net

- **04/06/2013 | 819 Steam Locomotive Special event**

Apr 6, 1500Z-2100Z, K5DAK, White Hall, AR. Pine Bluff Amateur Radio Club. 14.250. Certificate. E. Glenn Wolf Jr, 210 S Estates Cv, White Hall, AR 71602. Will be operation 14.250 +/- QRM. Any questions, please contact n5rn@adxa.org

- **04/11/2013 | 101st Anniversary of the Titanic Voyage**

Apr 11-Apr 15, 1330Z-0527Z, W1MGY, Indian Orchard, MA. Titanic Historical Society. 14.260 14.033 7.260 7.033. QSL. Titanic Historical Society QSL, PO Box 51053, 208 Main St, Indian Orchard, MA 01151. webpages.charter.net/kb1mu/Titanic/titanic.htm

- **04/20/2013 | International Marconi Day**

Apr 20, 0000Z-2359Z, GB5IMD, Flat Holm Island, WALES. Gordano Amateur Radio Group. 28.505 21.250 14.250 7.150. Certificate. Jim Bryant, 2 Redcliffe Close, Portishead, Bristol BS20 8HB, UNITED KINGDOM. Many participating stations Full details at g4usb.net/IMD/imd-2013/. Awards Info at g4usb.net/IMD/the-award/. www.g4kpm.co.uk/flat-holm-expedition-april-2013.html

- **04/27/2013 | 222nd Birthday of Samuel F.B. Morse**

Apr 27, 1400Z-1900Z, W2M, Poughkeepsie, NY. The QSY Society. 18.076 14.061 7.034. QSL. Stan Levandowski, 6 Chatham Ct, Fishkill, NY 12524. The QSY Society will celebrate the 222nd anniversary of the birth of Samuel F.B. Morse by operating three CW stations from the front porch of his historic Italianate-style home located at Locust Grove in Poughkeepsie, NY. The 40 meter station will operate at 100 watts; the 20 and 17 meter stations will operate at "QRP+" (10 to 15 watts). If you send us your QSL we will send you ours in return! Do not send money or envelopes! wb2lqf@arrl.net or www.qsysociety.org



M2 Antenna Systems' 15th Annual Open House and BBQ

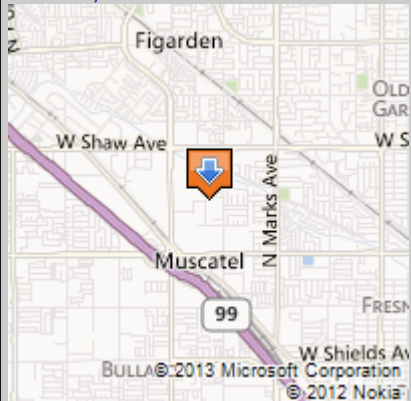


When

Saturday March 16, 2013 from
8:00 AM to 1:00 PM PDT
[Add to Calendar](#)

Where

M2 Antenna Systems, Inc.
4402 N. Selland Ave.
Fresno, CA 93722



[Driving](#) [Directions](#)

Staying Overnight?

[La Quinta Inn](#) has a special rate for M2 guests. Contact us for the discount code!

Dear ORANGE COUNTY AMATEUR RADIO CLUB,

Bring your swap table and your appetite! Spring is approaching and it will soon be time for our *15th Annual Open House and Bar-B-Q!*

There is NO CHARGE to attend!

Gates open at 8:00 am (7:30 for swap setup).

This year will be especially important as we celebrate the life a good friend and inspiration for this annual event, [Larry Hogue, W6OMF \(SK\)](#).

Amateur Radio Manufacturers and Dealers

We'll have Dennis Motschenbacher K7BV from [Yaesu](#), Janet Margelli KL7MF from [Ham Radio Outlet](#), Jim N6DHz and Linda Shryne from the [DX Store](#), Kurt Andress K7NV, Skip Bolnick KJ6Y of Communications Service Co., Dave Bottom W16R, from [RadioSport Headsets](#), Gordon Yee KI6UH from [QR Zed Engraving](#) and more!

Amateur Radio Activities

Mike Staal, K6MYC, renowned EME'er and co-owner of M2 will be heading up an EME demonstration using his latest high-performance antennas and the [2M-1K2 Solid State Amplifier](#). The [Clovis Amateur Radio Pioneers](#) will be hosting a "Perpetual T-Hunt". The [San Joaquin Valley Amateur Radio Society](#) will be running an HF Digital station, demonstrating HF amateur digital communications. There's a lot to see, so don't miss out!

What is the Purpose Behind the M2 Open House?

We are happy to open our facility up to local hams so they can catch a glimpse into our manufacturing process. We take pride in what we do and this is one way to show our appreciation.

The admission and the fun are all FREE!

Thank you for your continued support of this event. It has grown into an annual tradition that amateur radio operators look forward to each year. We look forward to seeing YOU in March!

Sincerely,

Jason Boyer, N6EY M2 Antenna Systems, Inc. sales@m2inc.com 559-432-8873



QST QST QST W6ZE Field Day University for Phone Operators!

OCARC is commemorating its 80th year with a major Field Day operation! For our members who prefer to operate **Phone** there will be a 3-part training series offered for you to expand your CQing and logging skills. Members of *all* Field Day experience levels are encouraged to attend!

These sessions will be held in our club's normal meeting room @ The Red Cross, 1 hour prior to the general meeting:

Class 1: Friday, March 15th @ 6:00 pm - Fundamentals of holding a frequency, calling CQ, and exchanging Field Day reports

Class 2: Friday, April 19th @ 6:00 pm - Logging with N3FJP software (while you hold the frequency!)

Class 3: Friday, May 17th @ 6:00 pm - "pileup" management and fixing mistakes (while you hold the frequency AND log!)

You will start with the basics and progressively add dimensions to your operating. Attend these classes and you'll prepare yourself for maximum fun on Field Day!

Please RSVP with Jeff, W6UX (W6UX@W6ZE.ORG). This will help ensure there are enough handouts and instructors for each class.

See you there!

